This document includes the Section 4.0, Potential Marine Pollution Control Devices (MPCDs) Option Description and Screen Results, of the Draft EPA “Weather Deck Runoff Discharge Assessment Report” published in 2003. The reference number is: EPA-842-D-06-007

DRAFT
Discharge Assessment Report
Weather Deck Runoff

Section 4.0 - Potential Marine Pollution Control Devices (MPCDs) Option Description and Screen Results

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4.0 Potential Marine Pollution Control Devices (MPCDs) Option Description and Screen Results

4.1 Introduction

Potential marine pollution control devices (MPCD) options to control deck runoff were identified through a variety of sources including: Phase I analyses, current practices, process knowledge, literature and internet research, and responses to sources sought announcements (Navy, 2000; Navy, 2001b; Navy, 2001c; Navy, 2001d; Navy 2001e; Navy, 2001f; Navy, 2001g). The following MPCD options were identified: effluent capture and containment system (ECCS), *ex situ* biological treatment, filter media, flocculation through electrocoagulation, flocculation by separating agents, supercritical water oxidation, and topside management plan (TMP).

Each MPCD option was screened to determine which MPCDs have been sufficiently proven for controlling deck runoff. The next sections briefly describe each MPCD option and the results of the screen. More details on these MPCD options and the screen analysis can be found in the MPCD screen reports (Navy, 2000; Navy, 2001b; Navy, 2001c; Navy, 2001d; Navy 2001e; Navy, 2001f; Navy, 2001g).

From the seven MPCD options identified, only the TMP passed the screen criteria. With the exception of the TMP, all the MPCD options identified would require the collection of deck runoff. This would not be feasible. Table 4-1 summarizes the results of the MPCD options identified and the resulting screening analysis.

Table 4-1: Deck Runoff Screens

Screen	Source of MPCD	Pass/Fail and Reason
Topside Management Plan	Identified in Phase I	Pass.
Effluent Capture and Containment	Response to sources sought announcement	Fail. Not used on waterborne vessels.
***Ex Situ* Biological Treatment**	Response to sources sought announcement	Fail. Not used on waterborne vessels to treat deck runoff.
Filter Media	NSWCCD* input and response to sources sought announcement	Fail. Not used on waterborne vessels to treat deck runoff.
Flocculation through Electrocoagulation	Response to sources sought announcement	Fail. Not used on waterborne vessels.
Flocculation by Separating Agents	Response to sources sought announcement	Fail. Not used on waterborne vessels.
Supercritical Water Oxidation	Response to sources sought announcement	Fail. Not used on waterborne vessels.

*Naval Surface Warfare Center Carderock Division (NSWCCD) submitted filter media as an MPCD option for six UNDS discharges: Catapult Water Brake Tank and Post Launch Retraction Exhaust, Deck Runoff, Firemain Systems, Gas Turbine Water, Submarine Bilgewater, and Surface Vessel Bilgewater/OWS.

4.2 Topside Management Plan

The TMP is the only MPCD option group that passed the screening process as outlined in the *Marine Pollution Control Device Screen Guidance Document.* Initially, a fleet wide topside management plan (FTMP) would be developed. The FTMP would address deck runoff constituent sources (i.e., process categories), list activities that could be implemented to prevent

the discharge of those constituents, and specify documentation procedures. Objectives would be developed for each category to describe the desired potential controls and expected results. The fleet wide plan would be distributed to individual vessel program offices or commands. Subsequently, the program offices or commands would develop a vessel topside management plan (VTMP). A VTMP would be a vessel-specific plan that identifies deck runoff constituents and their sources, identifies the objective for each applicable category that may contribute to deck runoff, suggests practices and/or specifies measures to achieve the objective(s), and specifies documentation requirements. Every vessel would be required to implement a VTMP. Individual vessels or commands would tailor the fleet wide plan to address only those topside categories that contribute to the vessel's deck runoff. The applicable activities listed in the FTMP, or their equivalent would be incorporated into a VTMP so that the vessel would achieve FTMP objectives. The activities in the FTMP would not necessarily be comprehensive and are intended to provide examples of how a vessel may achieve each objective. Vessels would be free to add new, innovative activities. Similar small vessels under the same command could share one VTMP, if appropriate.

When an activity fails to meet the control objective, that failure would trigger a revision of the VTMP to address the failure. Also, the VTMP and the FTMP would be reviewed periodically to address changes in topside processes and new mitigation techniques.

4.3 Effluent Capture and Containment System

The ECCS is a self-contained platform with berms around the perimeter that collect and contain wash water from land-based aircraft washdowns and other land-based cleaning operations. This technology has not been tested or proven in the marine environment (Navy, 2000). Therefore, ECCS fails the MPCD screen criteria.

4.4 *Ex Situ* Biological Treatment

Biological treatment is defined as "a treatment technology that uses bacteria to consume organic waste," (EPA, 1998). *Ex situ* biological treatment has not been used to treat deck runoff on waterborne vessels (Navy, 2001g). Therefore, *ex situ* biological treatment is not considered sufficiently proven and fails the MPCD screen criteria.

4.5 Filter Media

Filter media are substances that selectively remove constituents (e.g., organics and metals) from wastewater. There are no known instances of filter media being used to treat deck runoff (Navy, 2001f). Therefore, filter media fails the MPCD screen criteria.

4.6 Flocculation through Electrocoagulation

This process results in the destabilization and aggregation of smaller particles into larger particles. The resulting larger particles precipitate from solution or become large enough to be filtered out of solution. Flocculation through electrocoagulation is not proven on waterborne vessels (Navy, 2001b). Therefore, flocculation through electrocoagulation fails the MPCD screen criteria.

4.7 Flocculation by Separating Agents

Although achieved through different means, both coagulation and flocculation are processes by which suspended material present in water in a colloidal form are brought together into larger agglomerates. These agglomerates are then removed during wastewater processing by skimming

and filtration. Flocculation by separating agents is used on shoreside wastewater treatment plants. However, this technology has not been used to treat deck runoff on waterborne vessels (Navy, 2001c). Therefore, flocculation by separating agents fails the MPCD screen criteria.

4.8 Supercritical Water Oxidation

This potential MPCD uses supercritical water oxidation (SCWO) unit to control aqueous organic materials by converting them to carbon dioxide and water. SCWO technology is available for commercial use, but has not been used on a waterborne vessel or in the marine environment to treat deck runoff (Freeman, 1989; Navy, 2001d). Therefore, supercritical water oxidation fails the MPCD screen criteria.